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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/773,870	02/06/2004	Trevor Dean	A36142-PCT-USA; 0720	7221
21003	7590	12/01/2005	EXAMINER	
BAKER & BOTTS 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			KINNEY, ANNA L	
			ART UNIT	PAPER NUMBER
			1731	
DATE MAILED: 12/01/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/773,870

Applicant(s)

DEAN, TREVOR

Examiner

Anna Kinney

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
4a) Of the above claim(s) 1-15,36,38 and 40 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 16-35,37,39 and 41 is/are rejected.
7) ☒ Claim(s) 41 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/23/04.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 1-15, 36, 38, and 40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on November 7, 2005.

Applicant's election with traverse of Group II in the reply filed on November 7, 2005 is acknowledged. The traversal is on the ground(s) that the Groups are not distinct because the apparatus is specific to the manufacture of pulp. This is not found persuasive because the limitations that the applicant refers to in indicating pulp-specific apparatus are statements of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

As a result, the search for Group I (apparatus) is not limited to the same subclasses as Group II (method). The Examiner has established that these inventions are distinct, because different searches are required.

The requirement is still deemed proper and is therefore made FINAL.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

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The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it exceeds 150 words and contains "means" language. Correction is required. See MPEP § 608.01(b).

The disclosure is objected to because of the following informalities: The Examiner suggests that the applicant review the specification for typographical errors; for instance, on page 2, ¶ 0004, line 4, the word "modem" should be "modern".

Appropriate correction is required.

Claim Objections

Claim 41 is objected to because of the following informalities: the concentration of "1070%" appears to be a typographical error, particularly in view of the "10-70%" concentration in the specification (p. 9, line 1). For purposes of examination, the Examiner considers the concentration to be a range of 10-70%. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16, 17, and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "contrary material" is so broad as to be indeterminate. The Examiner cannot discern whether this refers to contaminants brought in with the raw material or fractions of the raw material itself. The Examiner suggests that the applicant clarify the intent so that the metes and bounds of patent protection sought can be identified.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 37 is rejected under 35 U.S.C. 102(b) as being anticipated by Stewart (EP 0122769 A2).

With respect to claim 37, Stewart discloses a method for treating raw elongate material suitable for use in a paper making plant (p. 1, lines 2-7) comprising, extracting contrary material from the raw material (p. 5, lines 21-29); crushing the raw material from which contrary material has been removed to remove unwanted material therefrom (p. 4, lines 9-19); splitting the crushed raw material lengthways (p. 7, lines 9-18).

Claim 41 is rejected under 35 U.S.C. 102(b) as being anticipated by Jacobs et al (WO 97/23687 A1).

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With respect to claim 41, Jacobs discloses a method of treatment of black liquor produced in a paper manufacturing plant (p. 1, lines 4-6) comprising, passing the liquor at a concentration of greater than 50% solids (p. 1, lines 12-20), which contains one specific point within the claimed range of 10-70% solids, to a processing vessel (p. 4, lines 5-9), and treating the concentrated liquor therein at a temperature of between 650°C – 850°C (p. 8, lines 11-27) or lower (p. 8, lines 3-10), which contains one specific point within the claimed range of between 300-650°C.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16, 18-31, 34, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart (EP 0122769 A2) in view of Hester et al (U.S. Patent 6,063,204), Birdseye (U.S. Patent 2,862,814) and Jacobs et al.

With respect to claim 16, Stewart discloses a method for treating raw elongate material suitable for use in a paper making plant (p. 1, lines 2-7) comprising: extracting contrary material from the raw material (p. 5, lines 21-29); crushing the raw material from which contrary material has been removed to remove unwanted material therefrom (p. 4, lines 9-19); splitting the crushed raw material lengthways (p. 7, lines 9-18).

Stewart does not disclose expressly supplying the material to a co-rotating screw conveyor or recovering black liquor.

Hester et al discloses supplying the raw material (Fig. 1, item 113) to a co-rotating screw conveyor divided into a plurality of zones (col. 14, lines 22-29) and processing said material in said conveyor; supplying treatment material to at least one zone (col.15, lines 26-51); controlling the temperature of the zones (col. 20, lines 46-63). Hester et al does not disclose producing pulp and a black liquor effluent, nor recovering black liquor.

Birdseye discloses producing pulp and black liquor in a screw conveyor (col. 3, lines 46-69 and col. 4, lines 14-29).

Jacobs et al discloses feeding concentrated black liquor (p. 1, lines 12-20) into a processing vessel in the form of a fluidised bed reactor for treatment of said black liquor (p. 3, lines 2-21), said processing vessel being part of treatment material and energy recovery means (p. 1, lines 21-29 and p. 10, lines 25-29). Jacobs et al does not disclose expressly that the black liquor is sprayed into the fluidized bed reactor. However, since this is a standard method of feeding a fluidized bed reactor, it would have been obvious to a person of ordinary skill in the art to do so at the time of the invention.

With respect to claim 18, Stewart discloses that the crushing of the raw material takes place between a pair of counter rotating knurled (e.g., fluted) rollers between which the raw material passes (p. 6, line 26 – p. 7, line 1).

With respect to claim 19, Stewart discloses that the splitting of the crushed material takes place between a counter rotating pinned roller (Fig. 1, item 25) and a top roller (Fig. 1, item 13) between which the crushed material passes. Stewart does not

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disclose a pair of pinned rollers. However, Stewart does disclose using a pinned plate or pinned stripper and worker roller pairs with the pinned roller (p. 4, line 34 – p. 5, line 2). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a pair of rollers to achieve the additional cleaning effect discussed by Stewart.

With respect to claim 20, Stewart discloses that between the steps of crushing the raw material and splitting the crushed material, further removal of contrary material present in the crushed material is carried out (p. 4, lines 9-27 and line 34 – p. 5, line 1).

With respect to claim 35, Stewart discloses that the raw elongate material is straw (p. 3, lines 7-12).

With respect to claim 21, Hester discloses the addition of steam at a point along the co-rotating twin screw conveyor (col. 30, lines 8-24).

With respect to claim 22, Hester discloses an increase or decrease of pressure at a point within the corotating twin screw conveyor (col. 36, Table, line 16; col. 30, lines 22-24).

With respect to claim 23, Hester discloses that raw material is passed through a screw conveyor having at least three zones (col. 15, lines 21-25) comprising a feed zone (e.g., mixing, col. 28, line 60), a treatment zone (e.g., impregnation, col. 29, line 31) to which treatment material is added (col. 15, lines 26-29 and 52-54) and a pressure zone (e.g., reaction, col. 30, line 7) maintained at a pressure above atmospheric (col. 36, Table, line 16).

With respect to claims 24, 25, 26, and 27, Hester does not disclose expressly that the screw conveyor has five zones. However, Hester does disclose subdividing the three disclosed zones (col. 31, lines 30-41). At the time of the invention, it would have been obvious to a person of ordinary skill in the art that if the reaction zone is divided into three zones, the screw conveyor would comprise five zones. Absent a showing of unexpected results, it would have further been obvious to optimize the pressures and temperatures of each zone to achieve the desired results within the limitations of the equipment.

With respect to claim 26, Hester discloses inserting steam into the treatment zone (col. 30, lines 8-24) and inserting pulping agents into the first pressure zone (col.15, lines 26-51).

With respect to claim 28, Hester and Birdseye do not disclose expressly that calcium hydroxide is added to the first pressure zone. However, Birdseye discloses using digestive solutions, and Hester discloses adding digestive solution in the first pressure zone. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use calcium hydroxide to control the pH of the digestive solution in the first pressure zone.

With respect to claims 29 and 30, Jacobs discloses passing the black liquor at a concentration of greater than 50% solids (p. 1, lines 12-20), which contains one specific point within the claimed range of 10-70% solids for claim 29, and the claimed range of 30-70% solids for claim 30, to the processing vessel (p. 4, lines 5-9), and treating the concentrated liquor therein at a temperature of between 650°C – 850°C (p. 8, lines 11-

27) or lower (p. 8, lines 3-10), which contains one specific point within the claimed range of between 300-650°C.

With respect to claim 34, Jacobs discloses chemically converting the material in the fluidised bed into sodium carbonate (p. 5, lines 3-10) and a gas (p. 5, lines 22-30) and liquids (p. 7, lines 27-30) with a combustible component (p. 6, lines 18-26) which can be utilised for energy production.

With respect to claim 31, Hester and Birdseye are applied as in the rejection of claim 16, above, regarding receiving black liquor from a co-rotating twin screw conveyor, and Jacobs is applied as in the rejection to claim 30, above, regarding the solids range and treatment temperature.

Stewart, Hester, Birdseye, and Jacobs are analogous art because they are all from the same field of endeavor, that of treating lignocellulosic materials and recovering the digestion liquor from treatment.

At the time of the invention, it would have been obvious to use the screw conveyor reactor as described by Hester, the pulping process as described by Birdseye, and the fluidized bed reactor as described by Jacobs to further treat the fibrous material of Stewart and to recover the chemicals used to obtain the invention as specified in claims 16, 18-31, 34, and 35.

The motivation would have been to provide for a more compact and economical design, much more amenable to successful commercialization (Hester, col. 13, lines 41-45); to provide for extraordinarily efficient production of pulp (Birdseye, col. 2, lines 46-59); and to recover both sodium and sulfur for use in pulping (Jacobs, p. 3, lines 2-4).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart, Hester, Birdseye, and Jacobs, as applied to claim 16 above, and further in view of Nolan (U.S. Patent 2,905,973).

With respect to claim 17, Nolan discloses that extraction of contrary material takes place on a conveyor belt provided with means for enabling the removal of contrary material (col. 3, lines 17-49).

Stewart, Hester, Birdseye, Jacobs, and Nolan are analogous art because they are all from the same field of endeavor, that of treating lignocellulosic materials and recovering the digestion liquor from treatment.

At the time of the invention, it would have been obvious to use conveyor belt extraction means as described by Nolan in the pulp production and chemical recovery process of Stewart, Hester, Birdseye, and Jacobs to obtain the invention as specified in claim 17.

The motivation would have been to separate pith from fibers economically and rapidly, in a way that is adaptable to large scale commercial operation, and that will permit greater yields of cleaned fibers (col. 2, lines 14-27).

Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart, Hester, Birdseye, and Jacobs, as applied to claim 16 above, and further in view of Adams et al (U.S. Patent 6,063,237).

With respect to claim 32, Jacobs discloses gasifying black liquor with an earth oxide (e.g., CaO, p. 3, lines 2-21), under sub-stoichiometric conditions (p. 4, lines 5-20).

Stewart, Hester, Birdseye, and Jacobs do not disclose expressly that the black liquor is fed to a toroidal fluidised bed containing an earth oxide at a specific ratio.

Adams et al discloses a toroidal fluidized bed (col. 6, lines 48-55) treating material contained in effluent (col. 4, lines 1-10). Absent a showing of unexpected results, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the ratio of earth oxide to black liquor solids.

With respect to claim 33, Stewart, Hester, Birdseye, Jacobs, and Adams do not disclose expressly that the fluidized bed is fed with a twin screw conveyor or that the black liquor solids / earth oxide mixture becomes a granular friable material. However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to use any appropriate apparatus to feed the fluidized bed, depending upon the qualities of the material to be fed. Screw conveyors are well known in the art for feeding process equipment. It would further be obvious that if the black liquor and earth oxide were mixed under the same conditions and in the same equipment as the instant invention, the resulting material would have the same qualities as that claimed, i.e., it would be granular friable.

Stewart, Hester, Birdseye, Jacobs, and Adams are analogous art because they are all from the same field of endeavor, that of treating lignocellulosic materials and recovering the digestion liquor from treatment.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a toroidal fluidized bed as described by Adams in the recovery

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process of Stewart, Hester, Birdseye, and Jacobs to obtain the invention as specified in claims 32 and 33.

The motivation would have been that it is suitable for heat treatment of a material to convert the inorganic content of such material to a form suitable for re-use (col. 2, lines 52-63).

Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hester et al in view of Birdseye.

With respect to claim 39, Hester et al discloses a method of treating raw material comprising passing the raw material through a plurality of zones (including pretreatment, i.e., impregnation, col. 29, line 31) in a co-rotating twin screw conveyor (col. 14, lines 22-29), inserting treatment material into at least one zone (col. 15, lines 26-29) and controlling the temperature of at least one of the zones (col. 15, line 66 – col. 16, line 2). Hester et al does not disclose expressly pulping.

Birdseye discloses pulping raw material in a screw conveyor (col. 3, lines 46-69).

Hester and Birdseye are analogous art because they are from the same field of endeavor, that of treating lignocellulosic materials in a screw conveyor reactor.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the twin screw conveyor of Hester to obtain pulp as described by Birdseye to obtain the invention as specified in claim 39.

The motivation would have been to provide for extraordinarily efficient production of pulp (Birdseye, col. 2, lines 46-59).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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